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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,772	11/03/2003	Roy S. Berns	MIPFP062	6341

25920 7590 12/30/2008

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EXAMINER	
KRASNIC, BERNARD	
ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
12/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/700,772	BERNS ET AL.	
	Examiner	Art Unit	
	BERNARD KRASNIC	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The amendment filed 9/18/2008 have been entered and made of record.

2. The application has pending claim(s) 1-12.

3. The Terminal Disclaimer filed 9/18/2008 have been approved, entered and made of record. Therefore, the Examiner has withdrawn the rejections made under the doctrine of Provisional Obvious-Type Double Patenting.

4. In response to the amendments filed on 9/18/2008:

The "Claim rejections under 35 U.S.C. 112, second paragraph" have been entered and therefore the Examiner withdraws the rejections under 35 U.S.C. 112, second paragraph.

5. The Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection because the Applicant has amended independent claim(s) 1, 6, and 11-12.

6. Applicant's arguments filed 9/18/2008 have been fully considered but they are not persuasive.

The Applicant alleges, "Neither the Arai reference nor the Takahashi reference ..." in page 10, and states respectively that neither prior art references Arai nor

Takahashi disclose or suggest the use of an image quality index that includes either one of a graininess index (GI) indicating graininess of a print and an ink amount index indicating an ink usage amount. The Examiner agrees, however upon further search and consideration, the new prior art reference Yamamoto (US 2002/0158933 A1) discloses the image quality index / image quality including either one of a graininess index (GI) / graininess indicating graininess / graininess of a print / inked image (see Yamamoto, abstract, Fig. 8, [0005] at lines 1-2, [0018]) and an ink amount index indicating an ink usage amount. Yamamoto also discloses a spectral reflectance measurer and a color difference brought about by differences in spectral characteristics between light sources, which is analogous to the present invention and more specifically analogous to the prior art references Arai and Takahashi and therefore using Yamamoto to further modify Arai [as modified by Takahashi] to disclose that the graininess index is included as an image quality index measure would be obvious and predictable to one of ordinary skill in the art at the time the invention was made. Therefore claims 1-12 are still not in condition for allowance because they are still not patentably distinguishable over the prior art references.

The Applicant alleges, "With regard to independent claims 5 and 10 ..." in page 10, and states respectively that the Applicants maintain their position that independent claims 5 and 10 are patentable over the combination of Arai in view of Takahashi for the reasons previously set forth during the prosecution of this application. The Examiner disagrees and still maintains the rejection and position that claims 5 and 10 are not patentable over the combination of Arai and Takahashi for the reasons previously set

forth during the prosecution of this application. Therefore claims 1-12 are still not in condition for allowance because they are still not patentably distinguishable over the prior art references.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al (US 5,929,906, as applied in previous Office Action) in view of Takahashi et al (US 6,987,567, as applied in previous Office Action).

Arai, as recited in claim 5, discloses an apparatus (20, 50) for converting colorimetric value data / color correcting unit (20, 50) into ink amount data (see Figs. 1 and 10, Abstract, col. 3, lines 9-28 and lines 45-58), comprising a first converter / converter portion (53, 54) for receiving colorimetric value data including either CIE-L*a*b* values or CIE-XYZ values and outputting ink amount data such that two colorimetric values of a virtual sample patch to be printed with the same ink amounts represented by the ink amount data under two different viewing conditions / usable illuminants (see Fig. 10, col. 6, lines 36-40, the profile memory gives the color converter printing conditions such as usable illuminants, col. 11, lines 44-50, the usable

illuminants being the daylight illuminant and the designated illuminant, col. 3, lines 45-58, col. 13, lines 31-40, col. 8, lines 1-9, equation 6 and 7, the colorimetric values are the CIE-L*a*b* or CIE-XYZ values) are equal to each other (col. 2, lines 38-45, col. 1, lines 60-61, Arai's converters are used to prevent the printed image to look unnatural by making sure that the same color amounts match when viewed under different illuminants); a second converter / converter portion (53, 54) for receiving colorimetric value data including either CIE-L*a*b* values or CIE-XYZ values and outputting ink amount data such that the ink amounts represented by the ink amount data reproduces spectral reflectance associated with the received colorimetric value (see Fig. 10, Abstract, col. 3, lines 9-28 and 45-60, col. 3, lines 13-21 and 56-58, Arai's converters are used to convert these colorimetric values to spectral reflectance's or corresponding CIE L*a*b values, col. 3, lines 45-58, col. 13, lines 31-40, col. 8, lines 1-9, equation 6 and 7, the colorimetric values are the CIE-L*a*b* or CIE-XYZ values); a selector / profile memory (24, 55) for selecting one of the first and second converters (see Figs. 1 and 10, col. 3, lines 9-28 and 45-60, col. 6, lines 36-40, the profile memory controls the weights of the neural network which essentially tell the converters what to process, col. 3, lines 22-28, an optimization means represented by the third converter and the memory where the optimization means obtains the output from the first and second converters and uses or selects the specific converter's output which minimizes the square error and minimizes the average color difference by use of neural networks to produce the output printed image data, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48); and an image processor / color correcting unit (20, 50) for converting given

colorimetric value data into ink amount data using the selected converter (see Figs. 1 and 10, Abstract, col. 3, lines 9-28, col. 11, lines 32-43, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48).

However, Arai fails to specifically disclose, as recited in claim 5, that the colorimetric value data of a virtual sample patch under two different viewing conditions are equal.

Takahashi, as recited in claim 5, discloses a virtual sample patch / target color to be printed with the same ink amounts represented by the ink amount data under two different viewing conditions / usable illuminants (9, S501) are equal to each other (see Figs. 1 and 5, Abstract, lines 14-18, col. 6, lines 22-35, the different viewing conditions are the usable illuminants produced by the light source and they could be equal if the user enters appropriate light source information, col. 8, lines 1-16, col. 7, lines 1-5, L*a*b* are appropriate colorimetric values which are used).

Therefore, in view of Takahashi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arai's color correcting method and apparatus by including the capabilities of having the colorimetric value data of a virtual sample patch under two different viewing conditions being equal in order to further enhance the efficiency of the entire conversion by improving the precision and accuracy through evaluation means (see Takahashi, abstract, lines 14-18).

As to claim 10, the claim is the corresponding method claim to claim 5 respectively. The discussions are addressed with regard to claim 5.

9. Claims 1-4, 6-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al (US 5,929,906, as applied in previous Office Action) in view of Takahashi et al (US 6,987,567, as applied in previous Office Action), and further in view of Yamamoto (US 2002/0158933 A1).

Arai, as recited in claim 1, discloses an apparatus (20, 50) for performing color conversion / color correcting with reference to a profile / parameters or connection weights (24, 55) defining correspondence between colorimetric value data and ink amount data (see Figs. 1 and 10, title, col. 6, lines 36-40, col. 5, lines 47-54, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48), comprising a profile memory (24, 55) (see Figs. 1 and 10) for storing a plurality of profiles, a color converter / conversion portion (53, 54) for selecting one of the plurality of profiles and for converting given colorimetric data into ink amount data with reference to the selected profile (see Fig. 10, col. 11, lines 32-43, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48).

Arai, as recited in claim 3, discloses the color converter / conversion portion (53, 54) receives selection of one of the printing conditions / usable illuminants (see Fig. 10, col. 6, lines 36-40, the profile memory gives the color converter printing conditions such as usable illuminants, col. 11, lines 44-50, the usable illuminants being the daylight illuminant and the designated illuminant, col. 13, lines 31-40).

Arai, as recited in claim 4, the plurality of profiles / usable illuminants are associated with plural types of images / daylight and designated illuminant images to be

reproduced by the ink amount data, and the color converter / conversion portion (53, 54) receives selection / from profile memory (55) of one of the plural types of images, and selects the profile associated with the selected image type (see Fig. 10, col. 11, lines 44-50, col. 13, lines 32-40).

Arai, as recited in claim 12, discloses an apparatus (20, 50) for producing a profile / parameters or connection weights (24, 55) defining correspondence between colorimetric value data and ink amount data representing a set of ink amounts of plural inks usable by a printer (see Figs. 1 and 10, title, col. 6, lines 36-40, col. 5, lines 47-54, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48), comprising a spectral printing model converter / conversion portion (53, 54) (see Fig. 10, col. 3, lines 9-28), and a profile generator / profile memory (24, 55) producing a profile defining correspondence between colorimetric value data and ink amount data based on the selected plural sample ink amount data (see Figs. 1 and 10, title, col. 6, lines 36-40 and 45-59, col. 5, lines 47-54, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48, col. 8, lines 1-9, equations 6 and 7).

However, Arai fails to specifically disclose, as recited in claim 1, that each profile being produced using plural sample ink amount data selected based on an evaluation index including a color difference index and an image quality index; the image quality index including either one of a graininess index (GI) indicating graininess of a print and an ink amount index indicating an ink usage amount. Arai also fails to specifically disclose, as recited in claim 2, that the color difference index and the image quality index includes plural types of indices, and the color converter receives user selection of

the color difference index and the image quality index. Arai also fails to specifically disclose, as recited in claim 3, that the color difference index and the image quality index are associated with plural types of printing conditions. Arai also fails to specifically disclose, as recited in claim 12, a spectral printing model converter for a color patch, a selector for selecting one of a plurality of color difference and image quality indices, a calculator for calculating a color difference and an evaluation index, and a selector based on the evaluation index; the image quality index including either one of a graininess index (GI) indicating graininess of a print and an ink amount index indicating an ink usage amount.

Takahashi, as recited in claim 1, discloses that each profile being produced using plural sample ink amount data selected based on an evaluation index / evaluation calculator (11) including a color difference index / difference calculator (8) and an image quality index / target color spectral data (5), the color difference index representing a color difference between a sample color / target color spectral data which is calculated from spectral reflectance of a virtual sample patch / target color to be printed with ink amounts represented by the sample ink amount data and a comparative color / compare color or evaluation color which is selected as a basis for comparison / color matching (6), the image quality index / target color spectral data representing image quality of the virtual sample patch / target color, the evaluation index for the plurality of profiles being defined to have different functional forms (see Fig. 1, Abstract, col. 5, lines 57-58), and the color difference index / color difference (1206) not being calculated from differences in the spectral reflectance of the sample color and the comparative

color but rather being calculated from differences in colorimetric values of the sample color / target color (1204) and comparative color / evaluation color (1205) (see col. 7, lines 1-5, Fig. 12), the colorimetric values being either CIE-L*a*b* values / L*a*b* or CIE-XYZ values (see col. 7, lines 1-5, Fig. 12, equation 1).

Takahashi, as recited in claim 2, discloses the color difference index / color difference (1206) includes plural types of available color difference indices (see Fig. 12, col. 7, lines 1-5, equation 1), and the image quality index / target color spectral data includes plural types of available image quality indices (see Abstract, respective frequencies in the spectrum), and the color converter (taught by Arai in claim 1 above) receives user selection of the color difference index and the image quality index (see col. 6, lines 22-25 and 36-39, the color difference index is received through user selection because both the target and evaluation spectral data are received by the users instructions and the difference is made from these two L*a*b* equivalent elements making the difference index essentially user selected), and selects the profile produced using the evaluation index including the selected color difference index and the selected image quality index (the profile essentially is the evaluation index or value produced by the user selected color difference index).

Takahashi, as recited in claim 3, discloses the color difference index / color difference calculator (1206) and the image quality index / target color spectral data has plural available types that are associated with a plurality of printing conditions / usable illuminants (9, S501) (see Figs. 1 and 5, Abstract, col. 6, lines 22-35, the plural available printing conditions are the usable illuminants produced by the light source, col. 8, lines

1-16), and the color converter receives selection of one of the printing conditions (the converter receives the profile being the evaluation index under the usable illuminants), and selects the profile (the profile essentially is the evaluation index or value) produced using the evaluation index / evaluation calculator (11) including proper types of the color difference index / color difference (8, 1206) and the image quality index / target color spectral data associated with the selected printing condition / usable illuminants (see Figs. 1 and 12).

Takahashi, as recited in claim 12, discloses a spectral printing model converter / spectral error evaluation apparatus (1, 2) for converting ink amount data to spectral reflectance of a color patch / evaluation color to be printed according to the ink amount data, the spectral printing model converter converting each of a plurality of sample ink amount data into spectral reflectance of a virtual sample patch / target color to be printed with the ink amounts represented by the sample ink amount data; a selector / evaluation value calculator for selecting one of a plurality (see Fig. 1, Abstract, respective frequencies in the spectrum) of color difference indices / difference calculator (8) and one or more of a plurality (see Fig. 1, Abstract, respective frequencies in the spectrum) of image quality indices / target color spectral data (5), each color difference index representing a color difference between a sample color / target color which is calculated from the spectral reflectance and a comparative color / compare color or evaluation color which is selected as a basis for comparison / color matching (6), each image quality index / target color spectral data representing image quality of the virtual sample patch / target color to be printed according to the sample ink amount data, each

color difference index / color difference (1206) not being calculated from differences in the spectral reflectance of the sample color and the comparative color but rather being calculated from differences in colorimetric values of the sample color / target color (1204) and the comparative color / evaluation color (1205) (see col. 7, lines 1-5, Fig. 12), the colorimetric values being either CIE-L*a*b* values / L*a*b* or CIE-XYZ values (see col. 7, lines 1-5, Fig. 12, equation 1); a calculator / difference calculator (8, 1206) for calculating values of the selected color difference index and the selected image quality index for the plurality of sample ink amount data; a calculator / evaluation value calculator (11, 1207) for calculating an evaluation index using the values of the selected color difference index and the selected image quality index for the plurality of sample ink amount data; a selector / (Arai's conversion portion selects from Arai's profile memory a profile which is essentially Takahashi's evaluation value) for selecting plural sample ink amount data based on the evaluation index (see Fig. 1, Abstract, col. 5, lines 57-58).

Therefore, in view of Takahashi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arai's color correcting method and apparatus by including the capabilities of having the evaluation index as part of the profile, allowing the user selection of the color difference, having a spectral printing model converter with the two calculators in Arai's conversion portions, in order to further enhance the efficiency of the entire conversion by improving the precision and accuracy through evaluation means (see Takahashi, abstract, lines 14-18).

However, Arai as modified by Takahashi still fails to explicitly suggest, as recited in claim 1, that the image quality index including either one of a graininess index (GI)

indicating graininess of a print and an ink amount index indicating an ink usage amount. Arai as modified by Takahashi also fails to specifically disclose, as recited in claim 12, that the image quality index including either one of a graininess index (GI) indicating graininess of a print and an ink amount index indicating an ink usage amount.

Yamamoto, as recited in claim 1, discloses the image quality index / image quality including either one of a graininess index (GI) / graininess indicating graininess / graininess of a print / inked image (see Yamamoto, abstract, Fig. 8, [0005] at lines 1-2, [0018]) and an ink amount index indicating an ink usage amount.

Yamamoto, as recited in claim 12, discloses the image quality index / image quality including either one of a graininess index (GI) / graininess indicating graininess / graininess of a print / inked image (see Yamamoto, abstract, Fig. 8, [0005] at lines 1-2, [0018]) and an ink amount index indicating an ink usage amount.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Arai's color correcting method and apparatus, as modified by Takahashi, using Yamamoto's teachings by including to the image quality index a graininess indicator in order to maintain balance between image graininess and the dependence of color appearance on the light source (see Yamamoto, [0018]).

As to claims 6-9, the claims are the corresponding method claims to claims 1-4 respectively. The discussions are addressed with regard to claims 1-4.

As to claim 11, the claim is the corresponding method claim to claim 12 respectively. The discussions are addressed with regard to claim 12.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hirai et al discloses controlling image quality according to the evaluated graininess; Sano discloses evaluating image quality in terms of graininess; Hirose discloses that an important characteristic in evaluating the image quality of an output image is graininess.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-1357. The examiner can normally be reached on Mon-Thur 8:00am-4:00pm and every other Friday 8:00am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jingge Wu/
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December 24, 2008